SERVICE DATA
FILE NO. 110-269

TOSHIBA

STEREO RADIO CASSETTE RECORDER

RT-103S(L-02)

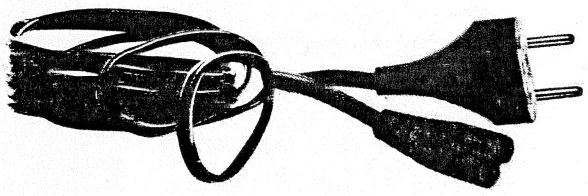
SPECIFICATIONS			
Cassette tape used:	C-30, C-60, C-90, C-120	Speakers:	120 mm (dia.) dynamic x 2
Tape speed:	4.8 cm/sec.	Jacks:	[MIC] jack x 2, Impedance 200 – 2K ohm
Track system:	Four-track, two-channel stereophonic		[AUX] jack x 2, Impedance 50K ohm
Recording system:	AC bias (50 kHz)		[PHONES] jack headphone
Erasing system:	Multipolar magnet erasing	Power supply:	AC 110V-127V/220V-240V, 50/60 Hz · DC 9V (SUM-1 "D" size x 6)
Frequency response:	Normal 60 Hz to 10 kHz	Power consumption:	13W
Receiving frequency:	FM: 88 – 108 MHz SW2: 7.5 – 22 MHz SW1: 2.3 – 7.5 MHz MW: 525 – 1605 kHz	Dimensions (W x H x D):	400 x 235 x 127 mm
		Weight:	2.9 kg (without batteries)
Intermediate frequency:	FM: 10.7 MHz MW, SW1, SW2: 455 kHz		
Antenna:	FM, SW1, SW2: telescopic antenna MW: ferrite-core antenna		

Specifications are subject to change without notice.

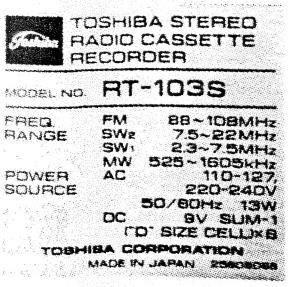
VF

CONTENTS

Power Supply Cord

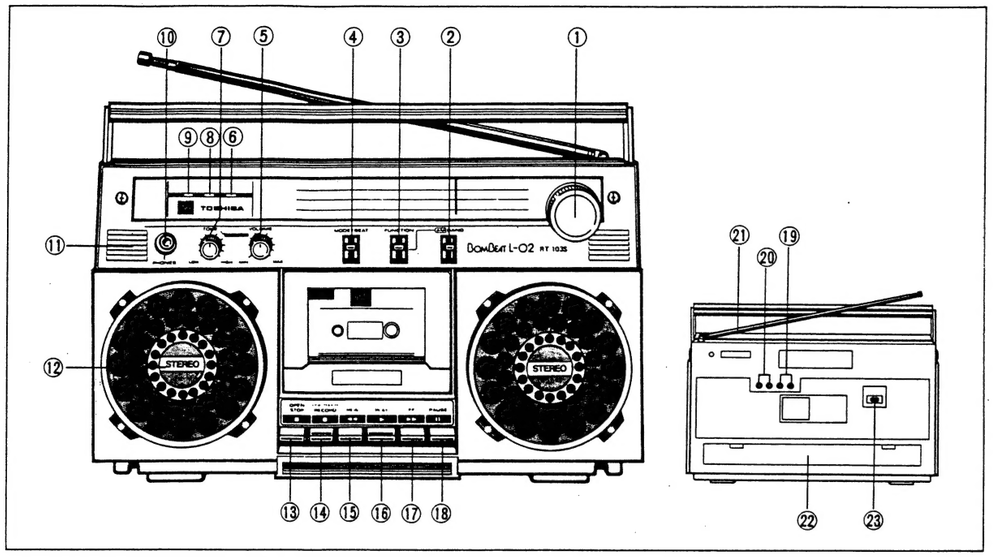


Nameplate



RT–103S(L–02)

CONTROL FUNCTIONS



① **Tuning Knob**

② **[AM BAND] Selector**
For selecting MW, SW_1 and SW_2 bands.

③ **[FUNCTION] Selector**
Select the required program source by switching to the corresponding position.
FM: For listening to radio braodcast of FM.
AM: For listening to radio broadcast of AM.
RADIO OFF/TAPE: For tape playback, and recoding via the built-in microphone, and external microphones.

④ **[MODE] Selector**
Switch to the STEREO position for stereo listening, or to the MONO position for monaural listening. In the STEREO WIDE position, an even greater stereo effect is obtained.

⑤ **[VOLUME] Control**
Turn to adjust the volume level when listening on the speakers or headphones. In the low volume region marked LOUDNESS (thick line), the treble and bass tones are amplified to give a more natural sound at low listening levels.

⑥ **[TUNING] Indicator**
This indicator lights when a broadcasting station is tuned.

⑦ **[TONE] Control**
Turn this knob clockwise to emphasize the tone.

⑧ **[FM STEREO] Indicator**
This indicator lights when an FM stereo broadcast is received (even when the MODE selector is in the MONO position.)

⑨ **[BATTERY] Indicator**
This indicator lights while the set is turned on as long as there is sufficient power in the batteries. (When AC mains power is used, the lamp stays on.)

⑩ **[PHONES] Jack**
To listen via a pair of headphones, connect to this jack. (Inserting the headphone plug automatically switches off the speakers.)

⑪ **Built-in Microphones**

⑫ **Speaker**

⑬ **[■STOP/OPEN] Key**
To stop the tape, press this key once. To open the cassette compartment, press a second time.

⑭ **[●ONE TOUCH RECORD] Key**
When this key is pressed, thereby starting recording.

⑮ **[◂◂ REW] Key**
For rapid rewinding of the tape.

⑯ **[▸PLAY] Key**
Press this key to play recorded tapes.

⑰ **[▸▸FF] Key**
For rapid forward winding of the tape.

⑱ **[IIPAUSE] Key**
Press to stop the tape temporarily during recording or playback. Press a second time to resume the recording or playback.

⑲ **[MIC] Jacks**
Microphones with 3.5 mm plugs (outside diameter) may be connected to these jacks.

⑳ **[AUX] Jacks**
To record via an external stereo amplifier, connect a cord with phonoplugs (optional) to these jacks.

㉑ **Telescopic Antenna**
Adjust the direction and length of this antenna to obtain the optimum sound when listening to FM, SW_1 and SW_2 radio broadcasts.

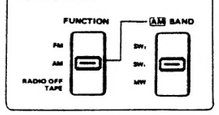
㉒ **Batteries Compartment**

㉓ **[AC POWER] Socket**

OPERATION

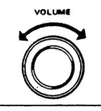
1 Listening to the Radio

1 Set the [FUNCTION] selector ③ to either the FM or AM position as desired.

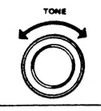


2 Turn the [TUNING] knob ① to tune in the desired radio station. For FM stations, adjust the antenna ㉑ direction and length to obtain best reception. For short-wave stations, leave the antenna in the vertical position.

3 Adjust to suitable volume level by turning the [VOLUME] control ⑤.



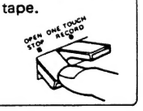
4 Adjust the tone by turning the [TONE] control ⑦.



2 When the [FUNCTION] selector ③ is set to the AM position, set the [AM BAND] selector ② to the desired band, i.e. SW_1, SW_2 or MW.

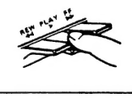
2 Listening to Tapes

1 Press the [■STOP/OPEN] key ⑬ to open the cassette compartment, and insert a recorded tape.

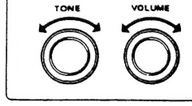


2 Set the [FUNCTION] selector ③ to the TAPE position.

3 Press the [▸PLAY] key ⑯ to start the tape.



4 Adjust the [VOLUME] ⑤ and [TONE] ⑦ controls.

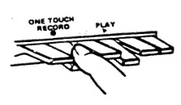


3 Recording Radio Broadcasts

1 Tune to the desired station as described above under "Listening to the Radio".

2 Press the [■STOP/OPEN] key ⑬, and insert a blank tape.

3 Press the [●ONE TOUCH RECORD] key ⑭ to start recording.



Since the RT-103S has been designed with an automatic recording level adjustment circuit (ALC), a suitable recording level will be set automatically without any further operations.

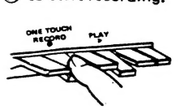
Furthermore, this set also features a "variable monitor system" permitting the listener to change the litening volume without effecting the recording level.

4 Recording via Built-in Microphones

1 Press the [■STOP/OPEN] key ⑬ and insert a blank tape.

2 Set the [FUNCTION] selector ③ to the TAPE position.

3 Press the [●ONE TOUCH RECORD] key ⑭ to start recording.



5 Recording with External Microphones

Plug external microphones (optional) into the MIC jacks in the rear of the set, and then proceed in exactly the same way as described above for "Recording via Built-in Microphones."

6 Recording from other Audio Equipment

An external amplifier can be connected to the [AUX] jacks ⑳ in the rear of the set. To record, switch the [FUNCTION] selector ③ to the TAPE position, and then proceed in exactly the same way as described above for "Recording via Built-in Microphones."

Auto Shut-Off (ASO) Mechanism

When the end of the tape is reached during recording and playback, depressed buttons are automatically released and the tape is automatically stop.

Note: **When a radio program is being recorded, however, power to the radio section will not be switched off until the [FUNCTION] selector ③ is set to the "RADIO OFF/TAPE" position. Also note that the ASO mechanism does not operate in fast forward or rewind modes. In the cases, the [■STOP/OPEN] key ⑬ must be pressed to stop the tape and release the depressed key.**

TIMER RECORDINGS

■ By connecting the RT-103S to an audio timer (Optional), radio programs can be recorded at any desired preset time.

1. Tune to the desired radio station as described earlier under "Listening to the Radio".
2. Insert a blank cassette tape in the compartment.
3. Set the audio timer to the desired recording start time, and then connect the RT-103S power cord to the timer.
4. Press the [●ONE TOUCH RECORD] key ⑭.
5. At the preset time, the RT-103S power will be switched on, and recording will start completely automatically.

Note: 1. The timer recording will not start at the preset time if the [II PAUSE] key ⑱ has been left set.

Note: 2. When the end of the tape is reached at the end of the recording, the ASO mechanism will stop the tape and release the keys, but the radio power will remain on. In order to have the RT-103S power supply completely switched off after a recording, an audio timer that has been designed to switch the power off again at the end of a recording must be used.

2. DISASSEMBLY INSTRUCTIONS

FRONT PANEL REMOVAL

1. Remove 6 Knobs (Tuning, AM Band, Function, Mode, Volume and Tone).
2. Press the open key.
3. Remove 5 screws Ⓑ and Ⓒ.
4. Separate the front cabinet from the back cabinet.

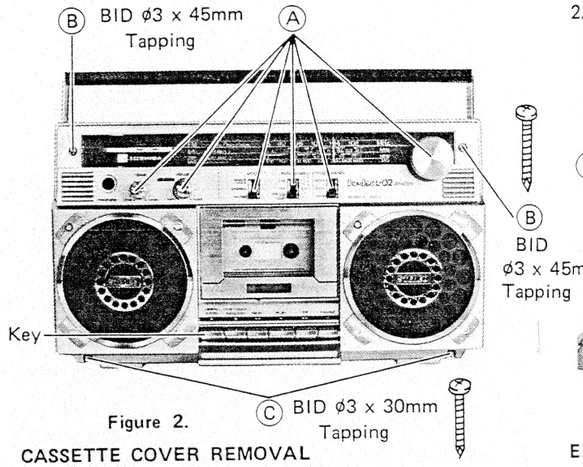


Figure 2.

CASSETTE COVER REMOVAL

Detach the cassette cover with retaining board of both sides of cassette cover pushing simultaneously in the direction marked arrow and pulling it upward.

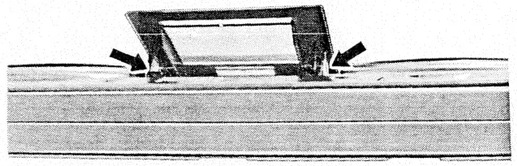


Figure 4.

FRAME AND DIAL DRUM REMOVAL

1. Remove a screw securing the dial drum.
2. Frame can be removed by inserting dial drum into the frame as illustrated without disconnecting dial cord. (See figure 6 and 7.)

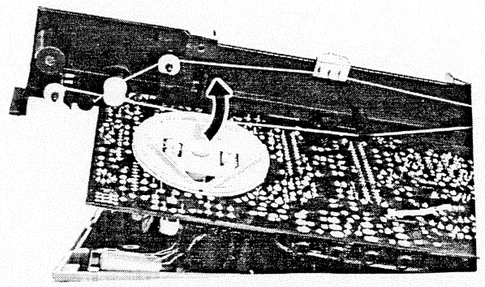


Figure 6.

MECHANISM ASS'Y REMOVAL

1. Remove 2 screws Ⓓ.
2. Remove 2 connections Ⓔ.
3. Separate the mechanism ass'y from the back cabinet.

P.C. BOARD REMOVAL

1. Remove 3 screws Ⓕ.
2. Pull out the P.C. Board from the back cabinet.

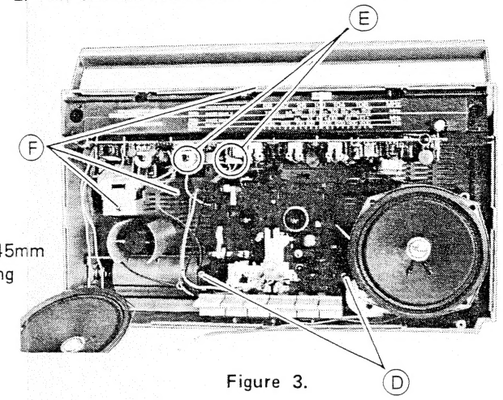


Figure 3.

ELECTRICAL INSPECTION

For easy inspection, insert the end of Jack into the opening of prop of cabinet back as illustrated in fig. Ⓖ after removing P.C. Board.

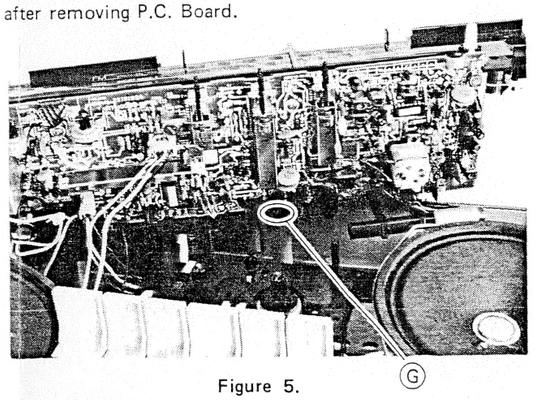


Figure 5.

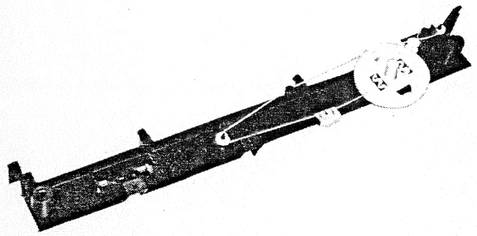


Figure 7.

3. HANDLE REMOVAL

When replacing the handle, remove it by cutting the handle washer shown in figure below with cutter etc.

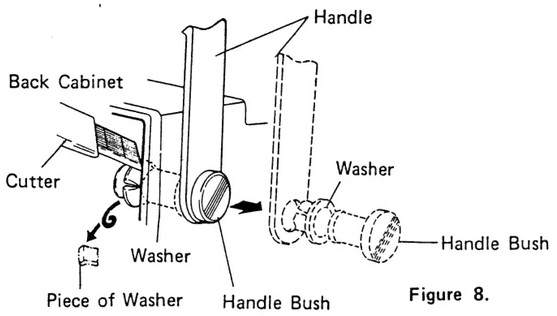


Figure 8.

4. METHOD OF P.R.C. REPAIRING

Cut defective printed-resistor-circuit off with knife. See Figure 9. Solder the replacement resistor (See replacement resistor parts list) on the opposite side of printed-circuit-board. See Figure10.

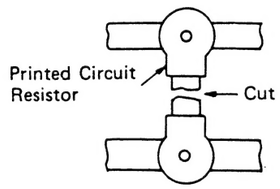


Figure 9.

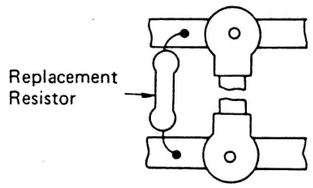


Figure 10.

5. DIAL CORD RESTRINGING

1. Set the drum on the variable capacitor with a screw.
2. Wind the dial cord in numerical order.
3. Keeping the dial cord pulled at the position ⑥, wind it on the dial drum at ⑦.
4. Hook the spring on the dial drum as in figure.
5. Adjust the pointer to "0" with tuning shaft turning extremely counterclockwise.

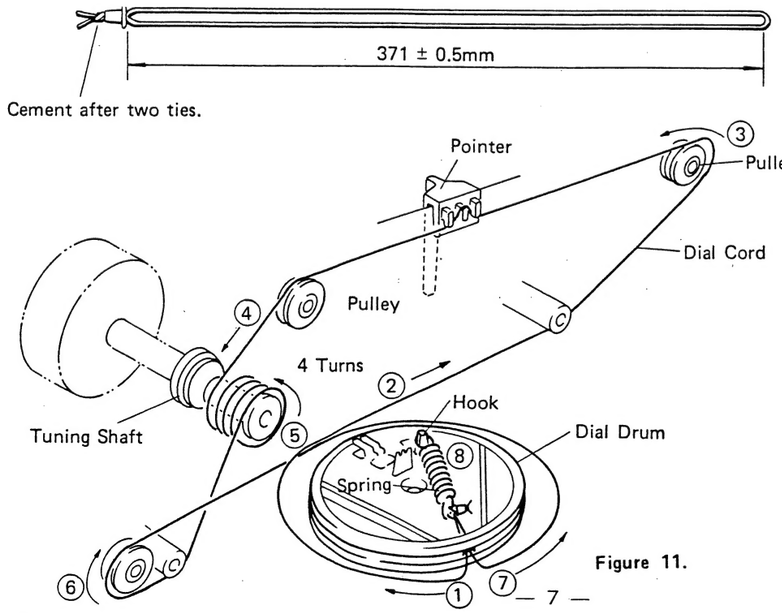
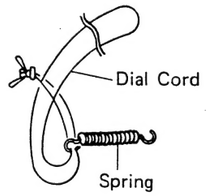
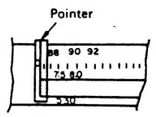


Figure 11.



Dial Cord Connection



6. BLOCK DIAGRAM

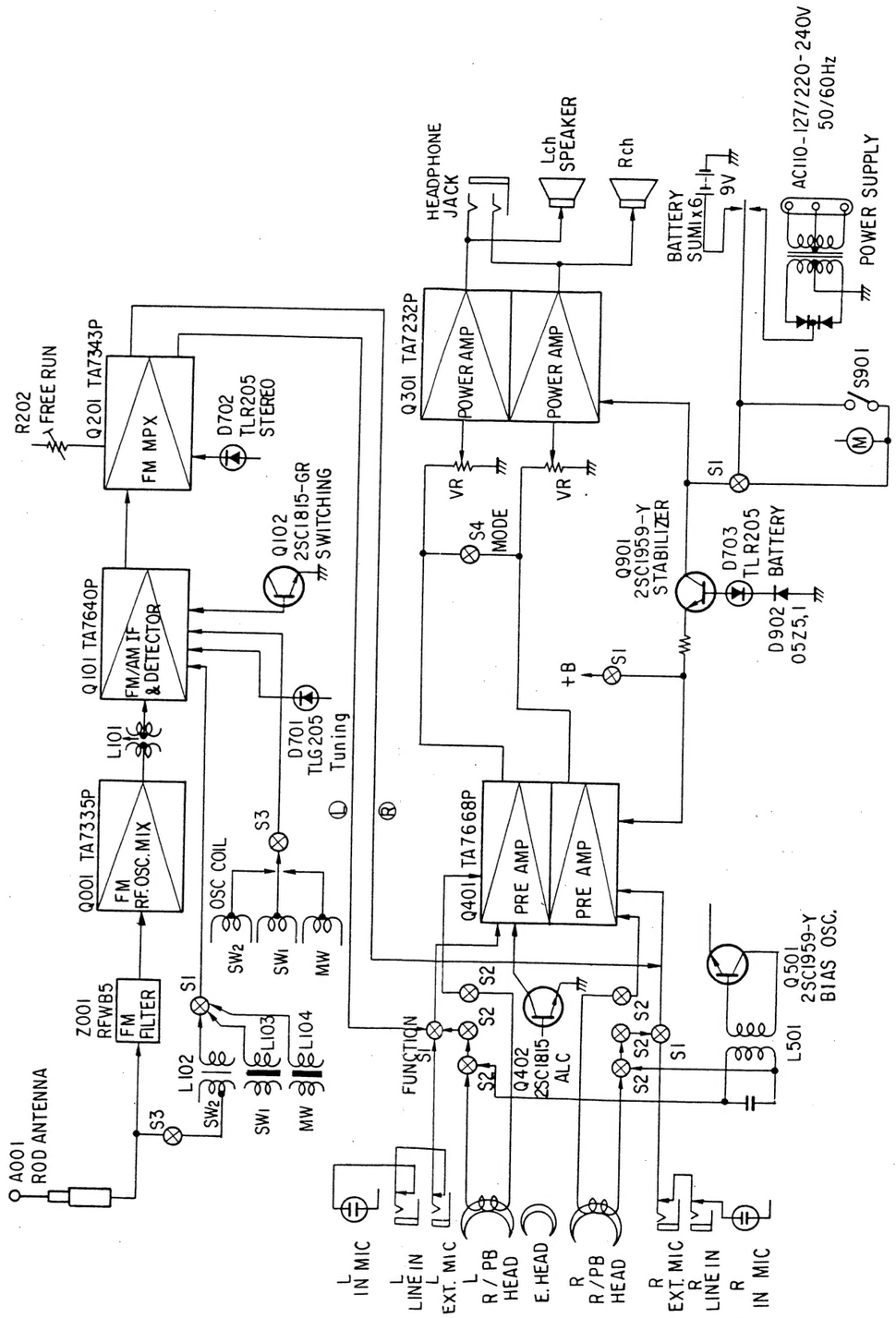


Figure 12.

7. ALIGNMENT INSTRUCTIONS

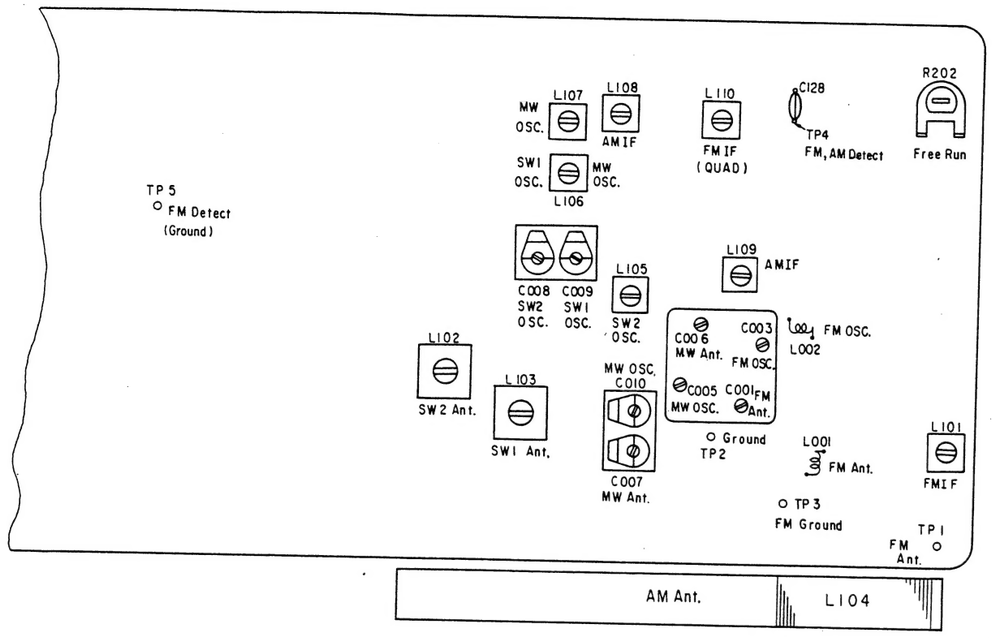


Figure 13.

TEST EQUIPMENT

1. Signal generator with a frequency range of at least from 455 kHz to 23 MHz AM.
2. Oscilloscope with a wide range amplifier of approximately 100 kHz.
3. Test loop – a coil of any size wire, one turn or more. (MW)
4. A 30 ohm dummy antenna. (SW1, SW2)
5. VTVM

AM ALIGNMENT

1. Turn on the AM signal generator and the VTVM allowing a fifteen-minute warm-up period.
2. Using the test loop across the output of the signal generator, inductively connect the signal generator to the radio.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set signal generator frequency as listed in ALIGNMENT CHART and maintain a sufficient output level to provide an indication on VTVM.
5. Set volume control at mid-position.
6. Proceed as outlined in the IF-MW and SW ALIGNMENT CHART.

MW ALIGNMENT CHART

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks
IF	1	455 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	L108, L109	Adjust for maximum indication.
MW	2	510 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	OSC. Coil L107 (MW)	Adjust for maximum indication.
	3	1650 kHz	Tuning Gang Fully clockwise (Highest Frequency)	OSC. Trim C010	Adjust for maximum indication.
	4	Repeat steps 2 and 3 as required.			
	5	600 kHz	Tune to Signal.	Ant. Coil L104 (MW)	Adjust for maximum indication.
	6	1400 kHz	Tune to Signal.	Ant. Trim. C007	Adjust for maximum indication.
	7	Repeat steps 5 and 6 as required.			

SW ALIGNMENT CHART

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks
SW1	1	2.25 MHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	OSC. Coil L106 (SW1)	Adjust for maximum indication.
	2	7.7 MHz	Tuning Gang Fully Clockwise (Highest Frequency)	OSC. Trim. C009	Adjust for maximum indication.
	3	Repeat steps 1 and 2 as required.			
	4	3 MHz	Tune to Signal.	Ant. Coil L103 (SW1)	Adjust for maximum indication.
	5	7 MHz	Tune to Signal.	Ant. Trim C006	Adjust for maximum indication.
	6	Repeat steps 5 and 6 as required.			
SW2	1	7.35 MHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	OSC. Coil L105 (SW2)	Adjust for maximum indication.
	2	22.5 MHz	Tuning Gang Fully Clockwise (Highest Frequency)	OSC. Trim. C008	Adjust for maximum indication.
	3	Repeat steps 1 and 2 as required.			
	4	9 MHz	Tune to Signal.	Ant. Trim. L102 (SW2)	Adjust for maximum indication.
	5	20 MHz	No Adjustment	Ant. Trim. C005	Adjust for maximum indication.
	6	Repeat steps 5 and 6 as required.			

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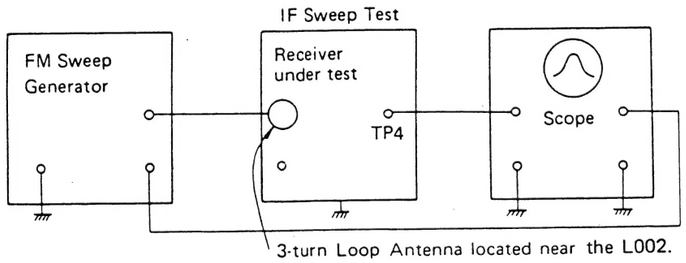
FM-IF ALIGNMENT

1. Set the select switch to FM position.
2. Turn on both sweep generator and oscilloscope, and allow a fifteen-minute warm-up period.
3. Connect the RF SWEEP SIGNAL OUTPUT from the signal generator through the loop antenna to the receiver.
4. Connect the oscilloscope vertical input directly to the test point TUN OUT H and connect the shielded lead to the test point E or chassis ground.
5. Connect the SWEEP VOLTAGE OUTPUT of the sweep generator to the oscilloscope.
6. Proceed as outlined in the FM-IF ALIGNMENT CHART.

FM-IF ALIGNMENT CHART

Step	Signal coupling	Equip.	Tuning	Connection	Adjust. point	Pattern
1	Connect sweep generator output to a three-turn loop antenna of 10cm diameter.	Sweep generator of 10.7 MHz center freq. with 10.7 MHz marker.	Tuning Knob fully counter-clockwise (Lowest Frequency.)	Set scope for connecting output signal from TUN OUT to vertical axis of scope "V" and sweep generator output to horizontal axis "H".	L101 L110	Turn the coil L110 fully counterclockwise to obtain a single peak. Adjust coil L101 in order until the best single peak is obtained. Figure 15. Finally turn the coil L110 to obtain S curve. See figures 16.



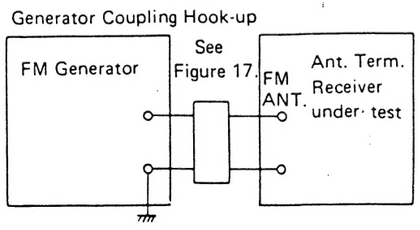


Figure 14.

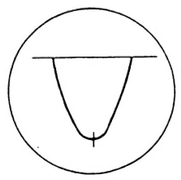


Figure 15.

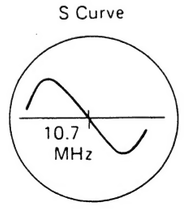


Figure 16.

FM-RF ALIGNMENT

1. Turn on the signal generator and the VTVM, and allow a fifteen-minute warm-up period.
2. Connect the signal generator output through a 75 ohm dummy antenna across FM ANT.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set the volume control to mid-position.
5. Adjust the signal generator frequency as indicated in FM-RF ALIGNMENT CHART, and maintain a sufficient signal output level to provide a measurable indication.
6. Proceed as outlined in the FM-RF ALIGNMENT CHART.

FM-RF ALIGNMENT CHART

Step	Signal Generator	Radio Dial Setting	Adjustment	Remarks
1	87.2 MHz	Tuning Knob fully Counterclockwise (Lowest Frequency)	OSC. Coil L002	Adjust for maximum output indication
2	109MHz	Tuning Knob fully Clockwise (Highest Frequency)	OSC. Trim. C004	Adjust for maximum output indication
3	Repeat steps 1 and 2 as required.			
4	90MHz	Tune to signal	Ant. Coil L001	Adjust for maximum output indication
5	106MHz		Ant. Trim. C001	
6	Repeat steps 4 and 5 as required.			

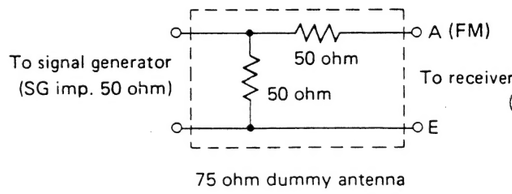


Figure 17.

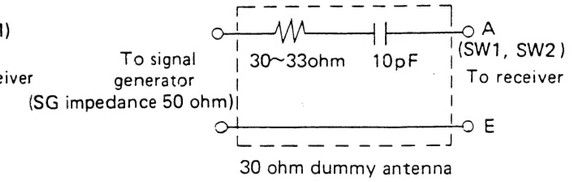


Figure 18.

FREE RUN FREQUENCY ALIGNMENT

Adjust R202 under no signal condition so as to obtain 76 kHz ±150 Hz.

RECORD/PLAYBACK HEAD ADJUSTMENT

A 6.3 kHz standard tape must be used for this adjustment. Connect a VTVM or an oscilloscope to the EXT Speaker jack and adjust the left azimuth and the right one by using a phillips screwdriver to maintain the maximum output voltage.

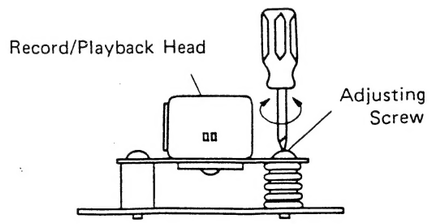
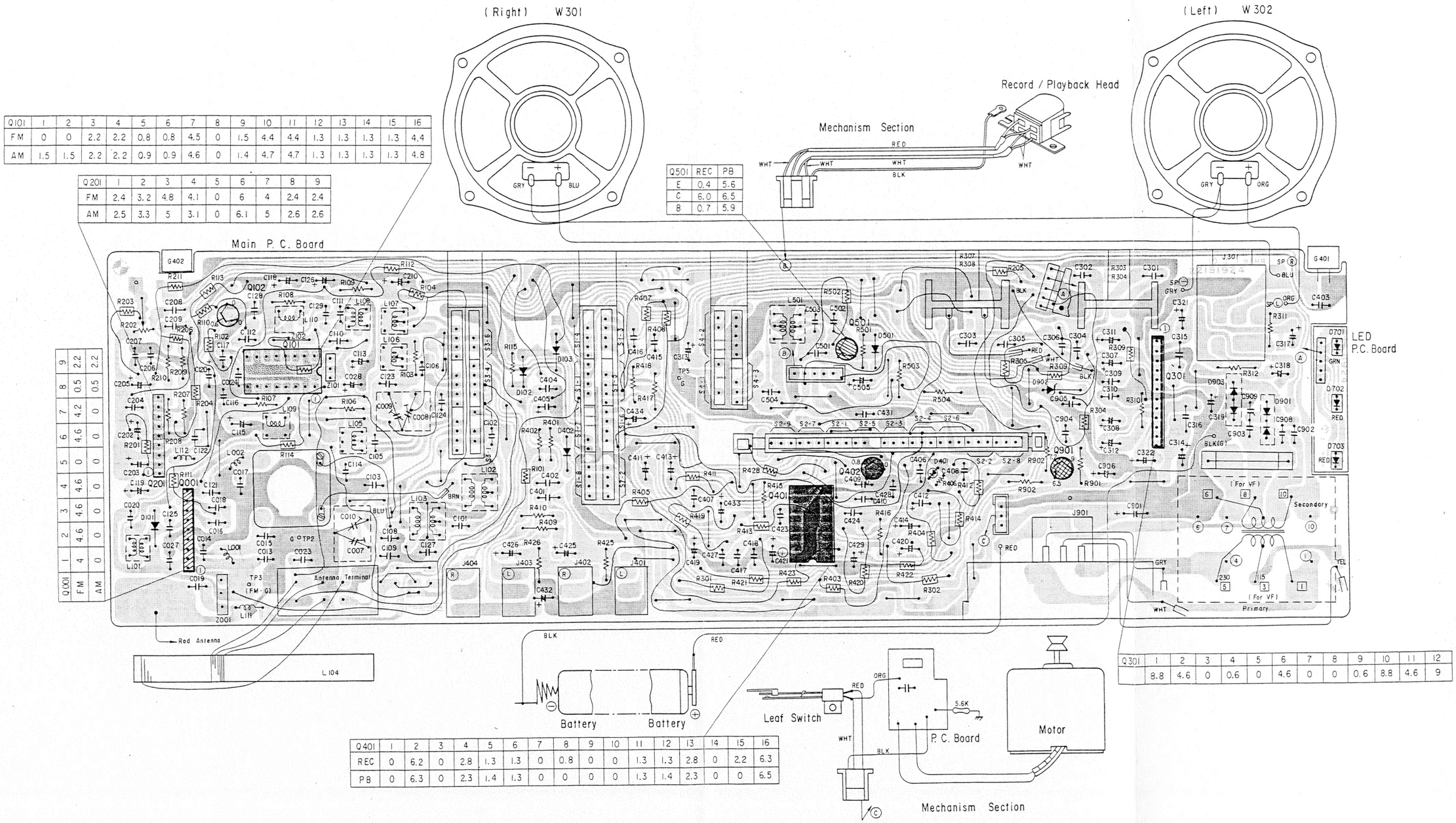


Figure 19.

TAKE-UP/SUPPLY REEL TENSION

1. Insert cassette torque meter (HARTAK X-87 Torquette).
2. Press PLAY button and read torque meter. Torque should be 35 to 65 gcm.
3. Release PLAY button and press REWIND button. Torque should be 60 to 160 gcm. If necessary, clean take-up reel or drive belt with alcohol, or replace belt.

8. ELECTRICAL PARTS LOCATIONS



Q101	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FM	0	0	2.2	2.2	0.8	0.8	4.5	0	1.5	4.4	4.4	1.3	1.3	1.3	1.3	4.4
AM	1.5	1.5	2.2	2.2	0.9	0.9	4.6	0	1.4	4.7	4.7	1.3	1.3	1.3	1.3	4.8

Q201	1	2	3	4	5	6	7	8	9
FM	2.4	3.2	4.8	4.1	0	6	4	2.4	2.4
AM	2.5	3.3	5	3.1	0	6.1	5	2.6	2.6

Q501	REC	PB
E	0.4	5.6
C	6.0	6.5
B	0.7	5.9

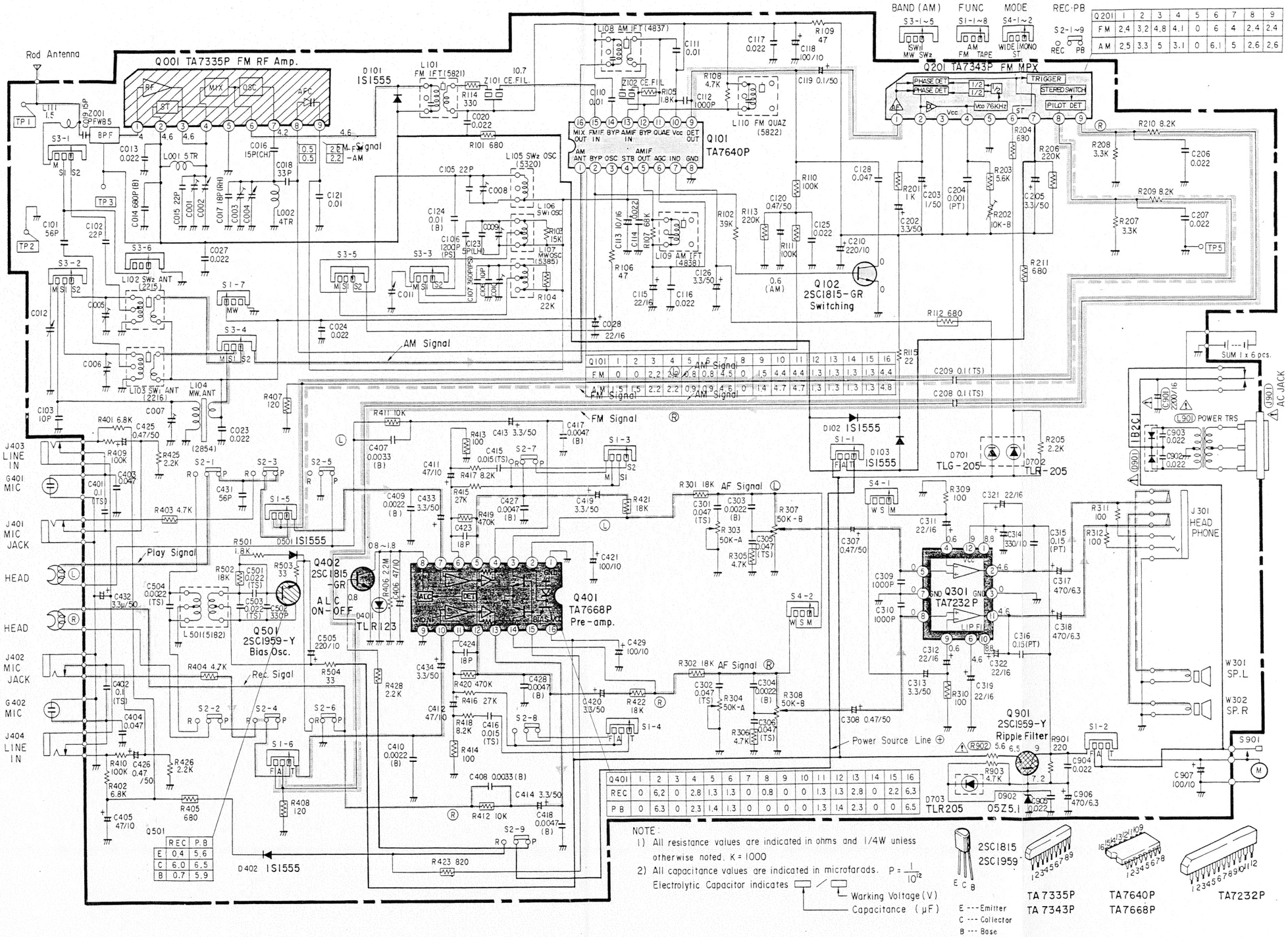
Q001	1	2	3	4	5	6	7	8	9
FM	4	4.6	4.6	4.6	0	4.6	4.2	0.5	2.2
AM	0	0	0	0	0	0	0	0.5	2.2

Q301	1	2	3	4	5	6	7	8	9	10	11	12
	8.8	4.6	0	0.6	0	4.6	0	0	0.6	8.8	4.6	9

Q401	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
REC	0	6.2	0	2.8	1.3	1.3	0	0.8	0	0	1.3	1.3	2.8	0	2.2	6.3
PB	0	6.3	0	2.3	1.4	1.3	0	0	0	0	1.3	1.4	2.3	0	0	6.5

Figure 20.

9. SCHEMATIC DIAGRAM



Q201	1	2	3	4	5	6	7	8	9
FM	2.4	3.2	4.8	4.1	0	6	4	2.4	2.4
AM	2.5	3.3	5	3.1	0	6.1	5	2.6	2.6

Q101	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FM	0	0	2.2	2.2	0.8	0.8	4.5	0	1.5	4.4	4.4	1.3	1.3	1.3	1.3	4.4
AM	1.5	2.2	2.2	0.9	0.9	4.6	0	1.4	4.7	4.7	1.3	1.3	1.3	1.3	4.8	

Q401	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
REC	0	6.2	0	2.8	1.3	1.3	0	0.8	0	0	1.3	1.3	2.8	0	2.2	6.3
P B	0	6.3	0	2.3	1.4	1.3	0	0	0	0	1.3	1.4	2.3	0	0	6.5

Q501	REC	P.B
E	0.4	5.6
C	6.0	6.5
B	0.7	5.9

NOTE:
1) All resistance values are indicated in ohms and 1/4W unless otherwise noted. K = 1000
2) All capacitance values are indicated in microfarads. $P = \frac{1}{10^{12}}$
Electrolytic Capacitor indicates — Working Voltage (V) / Capacitance (μF)

E --- Emitter
C --- Collector
B --- Base

2SC1815
2SC1959

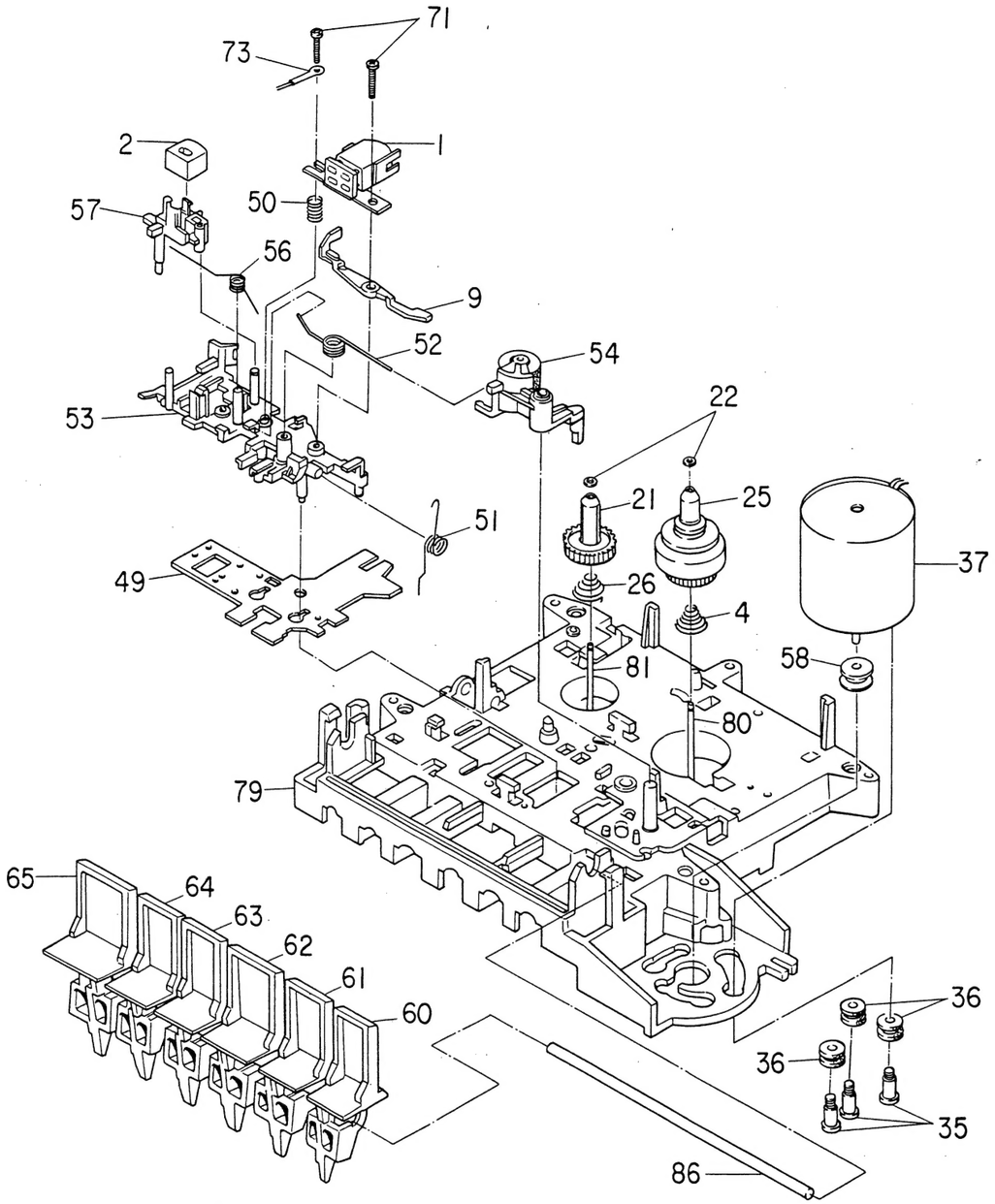
TA7335P
TA7343P

TA7640P
TA7668P

TA7232P

Figure 21.

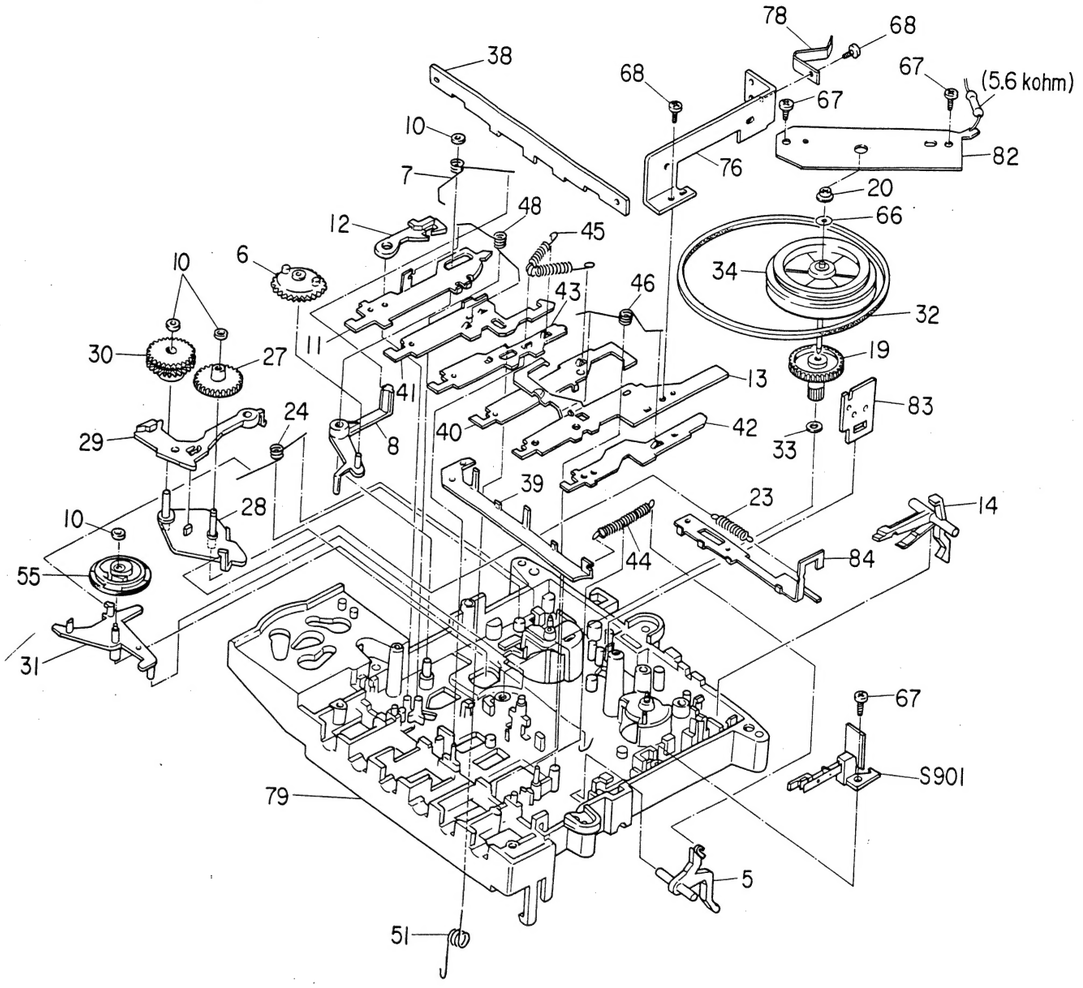
10-1. MECHANISM EXPLODED VIEW (UPPER)



NOTE: Excluded parts in the Parts List are not available as replacement parts.

Figure 22.

10-2. MECHANISM EXPLODED VIEW (LOWER)



NOTE: Excluded parts in the Parts List are not available as replacement parts.

Figure 23.

11. MECHANISM DISASSEMBLY AND SET UP

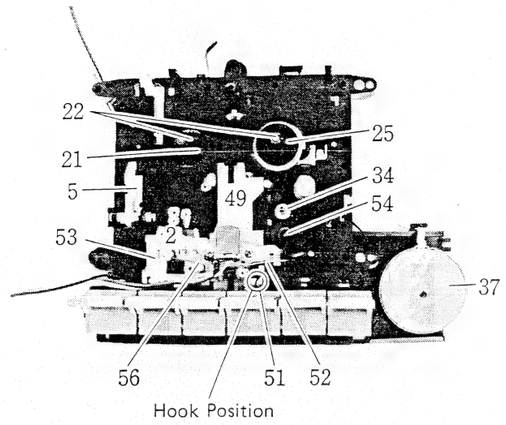


Figure 24.

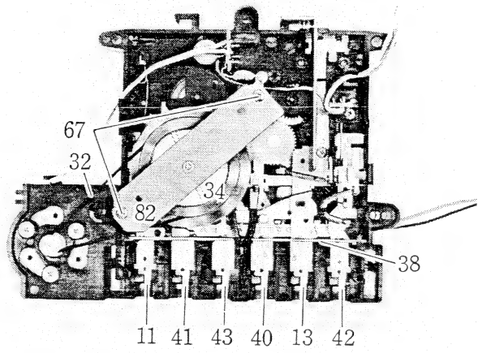


Figure 25.

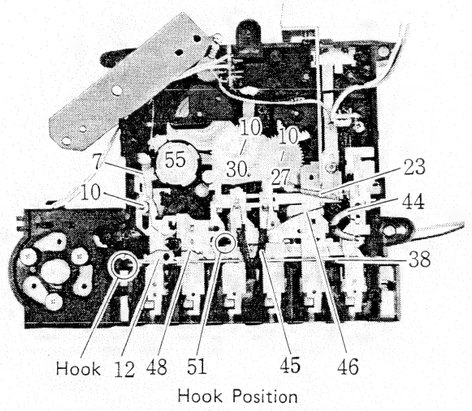


Figure 26.

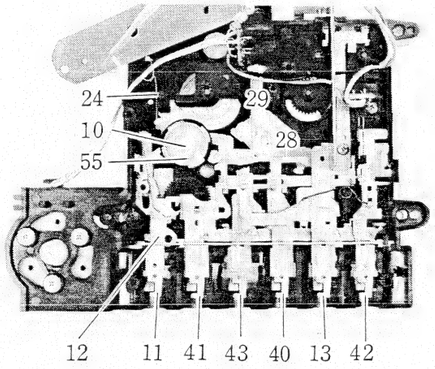


Figure 27.

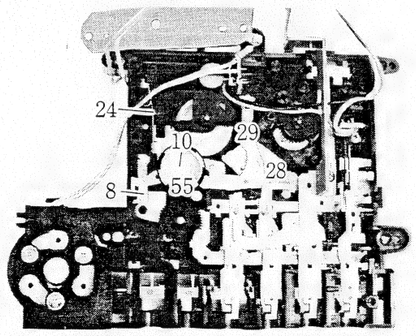


Figure 28.

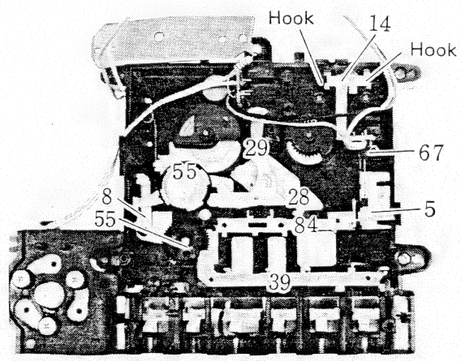


Figure 29.

1. First remove upper part, then remove lower part. To assemble, set up upper part then set up lower part. If setting up in wrong order, it results in failure.

1. Disassembly

1. Remove 51 and 52 . Pull 49 toward you. Set the section of 49 to projection of chassis, then pull them upward to detach 49 and 54 at the same time. (Fig. 24)
2. Remove two 67 and 82 . Remove 32 , 20 , 66 , 34 , 19 and 33 in order. (Fig. 25)
3. Remove 23 , 44 , 45 , 46 and 48 . Remove 10 and 7 . Remove 38 after removing hook as illustrated.
4. Remove the washer 10 securing 27 and 30 , then remove 27 and 30 . (Fig. 26)
5. Remove 12 , 11 , 13 , 41 , 43 , 40 and 42 in order. (Fig. 27)
6. Remove 24 , 29 and 28 . Remove 55 after removing 10 securing 55 . (Fig. 28)
7 Remove 67 to detach the leaf switch. Remove 2 hooks to detach 14 .
8. Motor can be detached by turning screw fully clockwise without removing it. (Fig. 29)
9. Remove 5 , 39 and 84 .
10. Remove the shaft of push button by detaching hooks at both ends.

2. Set up

1. Mount the push button.
2. Set up 1 , 2 , 9 , 50 , 51 , 52 and 56 . Mount 49 to the chassis. Set up 54 .
3. Set up 8 , 6 , 5 , 28 , 29 , 55 , 24 , 11 , 41 , 43 , 40 , 42 , 13 , 12 and 38 in order.
4. Set up 46 , 44 , 45 , 7 , 48 and 23 in order.
5. Insert 34 and set 32 between 34 and 37 .
6. Mount 82 and fix with 67 .
7. Be sure to hook the spring 51 .

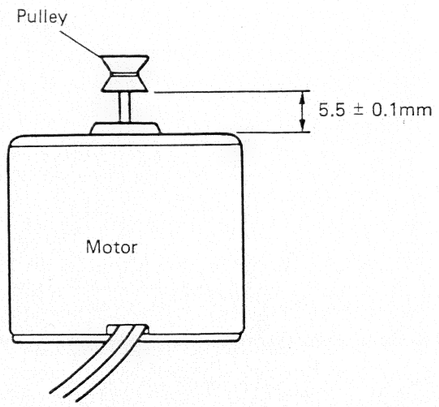


Figure 30.

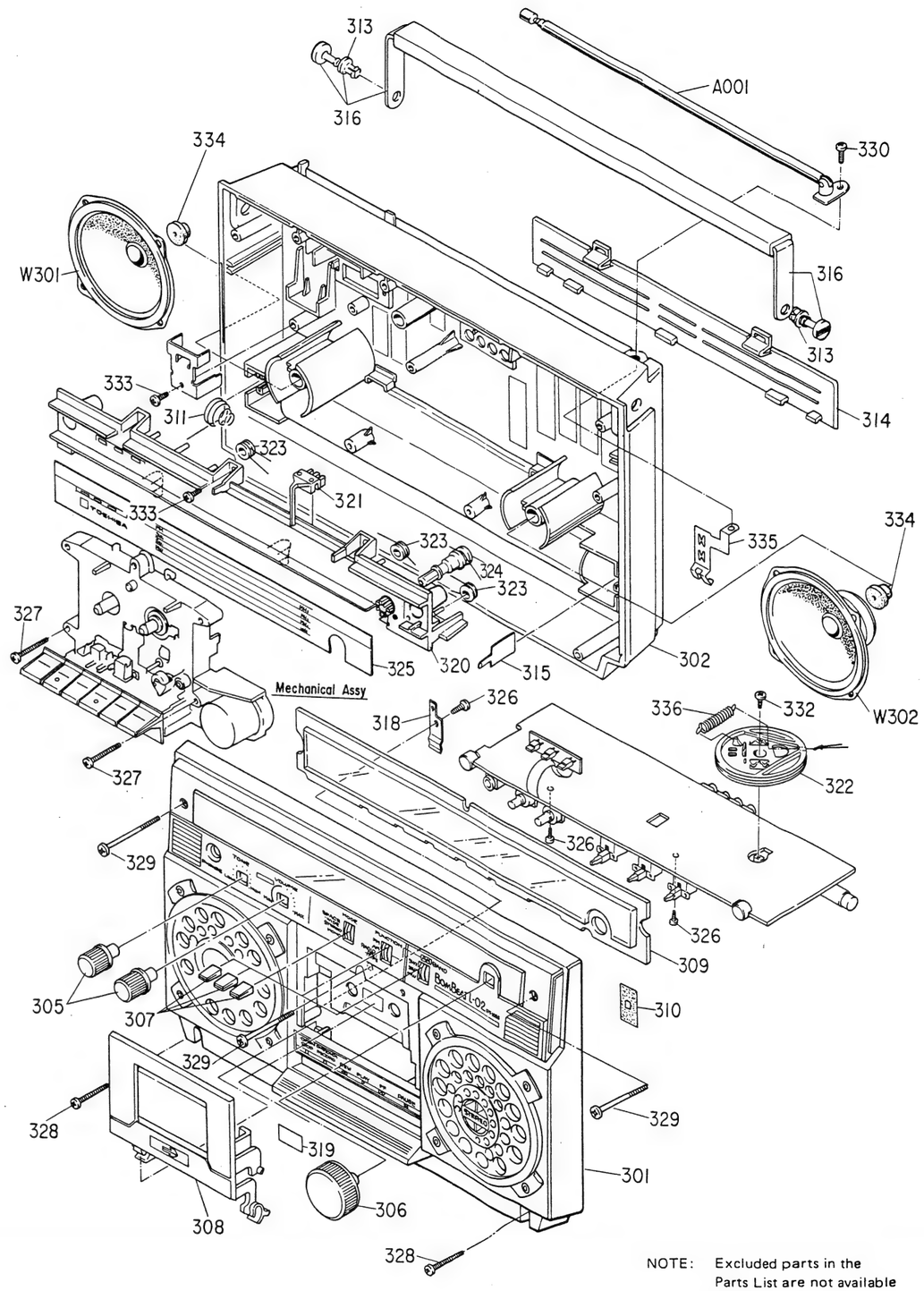
Install the motor and pulley according to the dimension shown left. Take enough care as wrong installation causes vibration noise of the belt.

12. MECHANISM PARTS LIST

Symbol No.	Part No.	Description
		MECHANISM
1	22217379	Head, Record/Playback, HRPT-91
2	22218240	Head, Erase, HET-58
4	25777047	Spring, Back Tension
5	25782429	Lever, Eject
6	25756247	ASO Gear
7	25773367	Spring, ASO Lever
8	25782440	ASO Lever
9	25782427	Lever, Detector
10	25783239	Bushing
11	25741852	Operation Plate, Pause
12	~~25782428~~ 25782430	Lever, Pause Lock
13	25741828	Operation Plate, Record
14	25782444	Lever, Record Lock
20	25725340	Holder, Flywheel
21	25754386	Hub Plate, Supply
22	25764549	Washer
23	25776400	Spring, Rewind Lever
24	25773543	Spring
25	25712392	Hub Plate, Take-up
26	25777055	Spring, Back Tension
27	25756179	Gear, High-speed
28	25782441	Lever, Rewind
29	25782442	Lever, Fast Forward
30	25791353	Gear Ass'y, High-speed
31	25783238	Mount, Take-up Idler
32	25755497	Belt, Drive
33	25764398	Washer, ϕ2.5 x ϕ6 x t 0.5
34	25717486	Flywheel Ass'y
35	22707296	Screw, ϕ2.6 x 1.8 x 4.9 mm
36	25761327	Cushion, Motor
37	22125767	Motor
38	25732357	Stop Plate
40	25741827	Operation Plate, Rewind
41	25741826	Operation Plate, F.F.
42	25741865	Operation Plate, Stop
43	25741844	Operation Plate, Play
44	25776331	Spring, Lock Slider
45	25776329	Spring, Operation C
46	25773369	Spring, Operation B
48	25773561	Spring, Operation
49	25741825	Head Slider
50	25777056	Spring, Azimuth
51	25773577	Spring, Head Slider
52	25773366	Spring, Pressure Roller
53	25783237	Head Mount
54	25717480	Pressure Roller
55	25713547	Idler Ass'y, Take-up
56	25773544	Spring, Gead Lever
57	25782428	Lever, Erase Head
58	25758089	Pulley, Motor

Symbol No.	Part No.	Description
60	25837723	Knob, Pause
61	25837724	Knob, Fast Forward
62	25837725	Knob, Play
63	25837726	Knob, Rewind
64	25837727	Knob, Record
65	25837728	Knob, Stop
66	25766043	Washer, Flywheel
67	22707301	Screw, BID ϕ2.6 x 8mm, Tapping
68	22707350	Screw, BID ϕ2.6 x 5mm
71	22707322	Screw, BID ϕ2 x 10mm
NO 1366 79	25791446	Main chassis Assy

13. CABINET EXPLODED VIEW



NOTE: Excluded parts in the Parts List are not available as replacement parts.

14. PARTS LIST

CAUTION: The ⚠ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
		CABINET PARTS
301	25881262	Cabinet Front Ass'y
302	25881238	Cabinet Back Ass'y
303	25808088	Nameplate, Main
305	25837629	Knob, Tone
306	25837650	Knob, Tuning
307	25837651	Knob, Lever Switch
308	25838672	Cover, Cassette
309	25838673	Dial Cover
310	25858490	Cover, Switch
311	25776318	Battery Spring
312	25835411	Washer, Handle
313	25835451	Bush, Handle
314	25838671	Cover, Battery
315	25864007	Contact, Battery
316	25815224	Handle Ass'y
318	25773558	Spring, Cassette Up
319	25824247	Reflector, Cassette
320	22718171	Frame Ass'y, Tuner
321	22741360	Pointer, Cursor Type
322	22742269	Dial Drum
323	22742270	Pulley
324	22749316	Tuning Shaft
325	25828933	Dial Plate
326	22707276	Screw, BID ϕ3 x 6mm, Tapping
327	22701246	Screw, BID ϕ3 x 30mm, Tapping
328	22707749	Screw, BID ϕ3 x 30mm, Tapping, BLK
329	22707706	Screw, BID ϕ3 x 45mm, Tapping
330	22707382	Screw, BID ϕ3 x 10mm, Tapping
332	22707473	Screw, BID ϕ2.6 x 6mm
333	22707453	Screw, BID ϕ3 x 16mm
334	25857035	Cushion, Speaker
336	25776387	Spring, Dial Drum
337	25808089	Nameplate, Main, L-01
		TRANSISTORS, ICS & DIODES
Q001		I.C., TA7335P
Q101		I.C., TA7640P
Q102, 402		Transistor, 2SC1815-GR
Q201		I.C., TA7343P
Q301		I.C., TA7232P
Q401		I.C., TA7668P
Q501, 901		Transistor, 2SC1959-Y

Symbol No.	Part No.	Description
D101, 102, 103, 501		Diode, 1S1555
D401		Diode, TLR123, LED, RED
D701		Diode, TLR205, LED, GRN
D702, 703		Diode, TLG205, LED, RED
⚠ D901		Diode, 1B2C1
D902		Diode, Zener, 05Z5.1
		COILS & TRANSFORMERS
L001	22294432	Coil, FM Antenna
L002	22294431	Coil, FM Oscillator
L101	22265821	IF Transformer, FM
L102	22282215	Coil, Antenna, SW2
L103	22282216	Coil, Antenna, SW1
L104	22242854	Coil, Antenna, MW
L105	22285320	Coil, Oscillator, SW2
L106	22285319	Coil, Oscillator, SW1
L107	22245385	Coil, Oscillator, MW
L108	22264837	IF Transformer, AM
L109	22264838	IF Transformer, AM
L110	22265822	IF Transformer, FM
L111	22291103	Coil, Choke, 1.5μH
L501	22235182	Coil, Oscillator, Tape
⚠ L901	22223956	Power Transformer
		ELECTRICAL PARTS
S1-1 ~ 8	22195822	Switch, Lever, Function AM-FM-TAPE
S2-1 ~ 9	22195878	Switch, Slide, Record/ Playback
S3-1 ~ 5	22195821	Switch, Lever, Band MW-SW1-SW2
S4-1 ~ 2	22195820	Switch, Lever, Mode WIDE-ST-MONO
S901	22195555	Switch, Leaf, Power
A001	22124491	Rod Antenna
W301, 302	22152360	Speaker, SP-12S1D
Z001	22153121	Filter, FM, RF, PFWB5
Z101	22153058	Filter, Ceramic, 10.7 MHz
Z102	22153083	Filter, Ceramic, AM
G401, 402	22154233	Microphone Unit,
J301	22163880	Jack, ϕ6, Headphone
J401, 402, 403, 404	22163865	Jack, ϕ3.5, Ext. Mic./Line-in
⚠ J901	22167952	AC Socket, 3P

Symbol No.	Part No.	Description
		CAPACITORS
		D = ±0.5pF, J = ±5%, K = ±10%, M = ±20%, Z = −20+80%
		Work voltages of capacitor are DC 50V unless otherwise noted.
		Abbreviations: CD = Ceramic Disk, EL = Electrolytic, MY = Mylar, PP = Polypropylene, BL = Barrier Layer, PS = Polystyrene
C001, 002, 003, 004, 011, 012, 005, 006	22308219	Variable
C007, 008 009, 010	22309183	Trimmer
C013	22342223	CD, 0.022mfd, Z
C014	22362681	CD, 680pF, K
C015	22362220	CD, 22pF, K
C016	22360132	CD, 15pF, J (CH)
C017	22360146	CD, 18pF, J (RH)
C018	22362330	CD, 33pF, K
C019	22362150	CD, 15pF, K
C020	22342223	CD, 0.022mfd, Z
C023	22342223	CD, 0.022mfd, Z
C024	22342223	CD, 0.022mfd, Z
C027	22342223	CD, 0.022mfd, Z
C028	22485220	EL, 22mfd, 16V
C101	22362560	CD, 56pF, K
C102	22362220	CD, 22pF, K
C103	22362100	CD, 10pF, K
C105	22362220	CD, 22pF, K
C106	22349122	CD, 1200pF, K
C107	22321016	PP, 360pF, J
C108	22362100	CD, 10pF, K
C110	22342103	CD, 0.01mfd, Z
C111	22342103	CD, 0.01mfd, Z
C112	22362102	CD, 1000pF, K
C113	22485100	EL, 10mfd, 16V
C114	22342223	CD, 0.022mfd, Z
C115	22485220	EL, 22mfd, 16V
C116	22342223	CD, 0.022mfd, Z
C117	~~22342223~~ 60329	~~CD~~ BL, 0.022mfd, ~~Z~~ M, 25V
C118	22483101	EL, 100mfd, 10V
C119	22488108	EL, 0.1mfd
C120	22488478	EL, 0.47mfd
C121	22342103	CD, 0.01mfd, Z
C123	22360615	CD, 5pF, D (LH)
C124	22349103	CD, 0.01mfd, K
C125	22342223	CD, 0.022mfd, Z
C126	22488339	EL, 3.3mfd
C128	22342473	CD, 0.047mfd, Z
C202	22488339	EL, 3.3mfd
C203	22488109	EL, 1mfd
C204	22372102	MY, 1000pF
C205	22488339	EL, 3.3mfd

Symbol No.	Part No.	Description
C206	22342223	CD, 0.022mfd, Z
C207	22342223	CD, 0.022mfd, Z
C208	22360333	BL, 0.1mfd, M, 25V
C209	22360333	BL, 0.1mfd, M, 25V
C210	22483221	EL, 220mfd, 10V
C301, 302	22360331	BL, 0.047mfd, Z
C303, 304	22349222	CD, 2200pF, K
C305, 306	22360331	BL, 0.047mfd, M, 25V
C307, 308	22488478	EL, 0.47mfd
C309, 310	22349102	CD, 1000pF, K
C311, 312	22485220	EL, 22mfd, 16V
C313	22488339	EL, 3.3mfd
C314	22483331	EL, 330mfd, 10V
C315, 316	22372154	MY, 0.15mfd, K
C317, 318	22482471	EL, 470mfd, 6.3V
C319	22485220	EL, 22mfd, 16V
C321, 322	22485220	EL, 22mfd, 16V
C401	22360333	BL, 0.1mfd, M, 25V
C402	22360333	BL, 0.1mfd, M, 25V
C403	22342473	CD, 0.047mfd, Z
C404	22342473	CD, 0.047mfd, Z
C405	22483470	EL, 47mfd, 10V
C406	22483470	EL, 47mfd, 10V
C407	22349332	CD, 3300pF, K
C408	22349332	CD, 3300pF, K
C409	22349222	CD, 2200pF, K
C410	22349222	CD, 2200pF, K
C411	22483470	EL, 47mfd, 10V
C412	22483470	EL, 47mfd, 10V
C413	22488339	EL, 3.3mfd
C414	22488339	EL, 3.3mfd
C415	22360328	BL, 0.015mfd, M, 25V
C416	22360328	BL, 0.015mfd, M, 25V
C417	22349472	CD, 4700pF, K
C418	22349472	CD, 4700pF, K
C419	22488339	EL, 3.3mfd
C420	22488339	EL, 3.3mfd
C421	22483101	EL, 100mfd, 10V
C423	22362180	CD, 18pF, K
C424	22362180	CD, 18pF, K
C425	22488478	EL, 0.47mfd
C426	22488478	EL, 0.47mfd
C427	22349472	CD, 4700pF, K
C428	22349472	CD, 4700pF, K
C429	22483101	EL, 100mfd, 10V
C431	22362560	CD, 56pF, K
C432	22488339	EL, 3.3mfd
C433	22488339	EL, 3.3mfd
C434	22488339	EL, 3.3mfd
C501	22360329	BL, 0.022mfd, M, 25V
C502	22362331	CD, 330pF, K
C503	22360329	BL, 0.022mfd, M, 25V
C504	22372222	MY, 2200pF, K

14. PARTS LIST

CAUTION: The ⚠ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
		CABINET PARTS
301	25881262	Cabinet Front Ass'y
302	25881238	Cabinet Back Ass'y
303	25808088	Nameplate, Main
305	25837629	Knob, Tone
306	25837650	Knob, Tuning
307	25837651	Knob, Lever Switch
308	25838672	Cover, Cassette
309	25838673	Dial Cover
310	25858490	Cover, Switch
311	25776318	Battery Spring
312	25835411	Washer, Handle
313	25835451	Bush, Handle
314	25838671	Cover, Battery
315	25864007	Contact, Battery
316	25815224	Handle Ass'y
318	25773558	Spring, Cassette Up
319	25824247	Reflector, Cassette
320	22718171	Frame Ass'y, Tuner
321	22741360	Pointer, Cursor Type
322	22742269	Dial Drum
323	22742270	Pulley
324	22749316	Tuning Shaft
325	25828933	Dial Plate
326	22707276	Screw, BID ϕ3 x 6mm, Tapping
327	22701246	Screw, BID ϕ3 x 30mm, Tapping
328	22707749	Screw, BID ϕ3 x 30mm, Tapping, BLK
329	22707706	Screw, BID ϕ3 x 45mm, Tapping
330	22707382	Screw, BID ϕ3 x 10mm, Tapping
332	22707473	Screw, BID ϕ2.6 x 6mm
333	22707453	Screw, BID ϕ3 x 16mm
334	25857035	Cushion, Speaker
336	25776387	Spring, Dial Drum
337	25808089	Nameplate, Main, L-01
		TRANSISTORS, ICS & DIODES
Q001		I.C., TA7335P
Q101		I.C., TA7640P
Q102, 402		Transistor, 2SC1815-GR
Q201		I.C., TA7343P
Q301		I.C., TA7232P
Q401		I.C., TA7668P
Q501, 901		Transistor, 2SC1959-Y

Symbol No.	Part No.	Description
D101, 102, 103, 501		Diode, 1S1555
D401		Diode, TLR123, LED, RED
D701		Diode, TLR205, LED, GRN
D702, 703		Diode, TLG205, LED, RED
⚠ D901		Diode, 1B2C1
D902		Diode, Zener, 05Z5.1
		COILS & TRANSFORMERS
L001	22294432	Coil, FM Antenna
L002	22294431	Coil, FM Oscillator
L101	22265821	IF Transformer, FM
L102	22282215	Coil, Antenna, SW2
L103	22282216	Coil, Antenna, SW1
L104	22242854	Coil, Antenna, MW
L105	22285320	Coil, Oscillator, SW2
L106	22285319	Coil, Oscillator, SW1
L107	22245385	Coil, Oscillator, MW
L108	22264837	IF Transformer, AM
L109	22264838	IF Transformer, AM
L110	22265822	IF Transformer, FM
L111	22291103	Coil, Choke, 1.5μH
L501	22235182	Coil, Oscillator, Tape
⚠ L901	22223956	Power Transformer
		ELECTRICAL PARTS
S1-1 ~ 8	22195822	Switch, Lever, Function AM-FM-TAPE
S2-1 ~ 9	22195878	Switch, Slide, Record/ Playback
S3-1 ~ 5	22195821	Switch, Lever, Band MW-SW1-SW2
S4-1 ~ 2	22195820	Switch, Lever, Mode WIDE-ST-MONO
S901	22195555	Switch, Leaf, Power
A001	22124491	Rod Antenna
W301, 302	22152360	Speaker, SP-12S1D
Z001	22153121	Filter, FM, RF, PFWB5
Z101	22153058	Filter, Ceramic, 10.7 MHz
Z102	22153083	Filter, Ceramic, AM
G401, 402	22154233	Microphone Unit,
J301	22163880	Jack, ϕ6, Headphone
J401, 402, 403, 404	22163865	Jack, ϕ3.5, Ext. Mic./Line-in
⚠ J901	22167952	AC Socket, 3P

Symbol No.	Part No.	Description
		CAPACITORS
		D = ±0.5pF, J = ±5%, K = ±10%, M = ±20%, Z = −20+80%
		Work voltages of capacitor are DC 50V unless otherwise noted.
		Abbreviations: CD = Ceramic Disk, EL = Electrolytic, MY = Mylar, PP = Polypropylene, BL = Barrier Layer, PS = Polystyrene
C001, 002, 003, 004, 011, 012, 005, 006	22308219	Variable
C007, 008 009, 010	22309183	Trimmer
C013	22342223	CD, 0.022mfd, Z
C014	22362681	CD, 680pF, K
C015	22362220	CD, 22pF, K
C016	22360132	CD, 15pF, J (CH)
C017	22360146	CD, 18pF, J (RH)
C018	22362330	CD, 33pF, K
C019	22362150	CD, 15pF, K
C020	22342223	CD, 0.022mfd, Z
C023	22342223	CD, 0.022mfd, Z
C024	22342223	CD, 0.022mfd, Z
C027	22342223	CD, 0.022mfd, Z
C028	22485220	EL, 22mfd, 16V
C101	22362560	CD, 56pF, K
C102	22362220	CD, 22pF, K
C103	22362100	CD, 10pF, K
C105	22362220	CD, 22pF, K
C106	22349122	CD, 1200pF, K
C107	22321016	PP, 360pF, J
C108	22362100	CD, 10pF, K
C110	22342103	CD, 0.01mfd, Z
C111	22342103	CD, 0.01mfd, Z
C112	22362102	CD, 1000pF, K
C113	22485100	EL, 10mfd, 16V
C114	22342223	CD, 0.022mfd, Z
C115	22485220	EL, 22mfd, 16V
C116	22342223	CD, 0.022mfd, Z
C117	22342223	~~CD~~ BL, 0.022mfd, ~~Z~~ M, 25V
C118	22483101	EL, 100mfd, 10V
C119	22488108	EL, 0.1mfd
C120	22488478	EL, 0.47mfd
C121	22342103	CD, 0.01mfd, Z
C123	22360615	CD, 5pF, D (LH)
C124	22349103	CD, 0.01mfd, K
C125	22342223	CD, 0.022mfd, Z
C126	22488339	EL, 3.3mfd
C128	22342473	CD, 0.047mfd, Z
C202	22488339	EL, 3.3mfd
C203	22488109	EL, 1mfd
C204	22372102	MY, 1000pF
C205	22488339	EL, 3.3mfd

Symbol No.	Part No.	Description
C206	22342223	CD, 0.022mfd, Z
C207	22342223	CD, 0.022mfd, Z
C208	22360333	BL, 0.1mfd, M, 25V
C209	22360333	BL, 0.1mfd, M, 25V
C210	22483221	EL, 220mfd, 10V
C301, 302	22360331	BL, 0.047mfd, Z
C303, 304	22349222	CD, 2200pF, K
C305, 306	22360331	BL, 0.047mfd, M, 25V
C307, 308	22488478	EL, 0.47mfd
C309, 310	22349102	CD, 1000pF, K
C311, 312	22485220	EL, 22mfd, 16V
C313	22488339	EL, 3.3mfd
C314	22483331	EL, 330mfd, 10V
C315, 316	22372154	MY, 0.15mfd, K
C317, 318	22482471	EL, 470mfd, 6.3V
C319	22485220	EL, 22mfd, 16V
C321, 322	22485220	EL, 22mfd, 16V
C401	22360333	BL, 0.1mfd, M, 25V
C402	22360333	BL, 0.1mfd, M, 25V
C403	22342473	CD, 0.047mfd, Z
C404	22342473	CD, 0.047mfd, Z
C405	22483470	EL, 47mfd, 10V
C406	22483470	EL, 47mfd, 10V
C407	22349332	CD, 3300pF, K
C408	22349332	CD, 3300pF, K
C409	22349222	CD, 2200pF, K
C410	22349222	CD, 2200pF, K
C411	22483470	EL, 47mfd, 10V
C412	22483470	EL, 47mfd, 10V
C413	22488339	EL, 3.3mfd
C414	22488339	EL, 3.3mfd
C415	22360328	BL, 0.015mfd, M, 25V
C416	22360328	BL, 0.015mfd, M, 25V
C417	22349472	CD, 4700pF, K
C418	22349472	CD, 4700pF, K
C419	22488339	EL, 3.3mfd
C420	22488339	EL, 3.3mfd
C421	22483101	EL, 100mfd, 10V
C423	22362180	CD, 18pF, K
C424	22362180	CD, 18pF, K
C425	22488478	EL, 0.47mfd
C426	22488478	EL, 0.47mfd
C427	22349472	CD, 4700pF, K
C428	22349472	CD, 4700pF, K
C429	22483101	EL, 100mfd, 10V
C431	22362560	CD, 56pF, K
C432	22488339	EL, 3.3mfd
C433	22488339	EL, 3.3mfd
C434	22488339	EL, 3.3mfd
C501	22360329	BL, 0.022mfd, M, 25V
C502	22362331	CD, 330pF, K
C503	22360329	BL, 0.022mfd, M, 25V
C504	22372222	MY, 2200pF, K

Symbol No.	Part No.	Description
C505	22483221	EL, 220mfd, 10V
⚠ C901	22485222	EL, 2200mfd, 16V
C902, 903	22342223	CD, 0.022mfd, Z
C904, 905	22342223	CD, 0.022mfd, Z
C906	22482471	EL, 470mfd, 6.3V
C907	22483101	EL, 100μF, 10V

RESISTORS

1. **Resistors are Carbon film ¼W, ±5%, unless otherwise noted.**
2. **PRC is short for the printed resistor circuit. If replacement of the resistor in PRC is required. Please use the substitutional fixed Carbon film resistor of ¼W, ±5% according to the following list. K = 1000, M = 1000000**

R101	22545681	680 ohm (PRC)
R102	22545393	39K ohm
R103	22545153	15K ohm
R104	22545223	22K ohm (PRC)
R105	22545182	1.8K ohm
R106	22545470	47 ohm
R107	22545683	68K ohm
R108	22545472	4.7K ohm
R109	22545470	47 ohm
R110	22545104	100K ohm (PRC)
R111	22545104	100K ohm (PRC)
R112	22545681	680 ohm (PRC)
R113	22545224	220K ohm (PRC)
R114	22545331	330 ohm (PRC)
R115	22545220	22 ohm
R201	22545102	1K ohm (PRC)
R202	22658599	Semi-fixed Variable, 10K-B Free Run
R203	22545562	5.6K ohm (PRC)
R204	22545681	680 ohm (PRC)
R205	22545222	2.2K ohm
R206	22545224	220K ohm (PRC)
R207	22545332	3.3K ohm
R208	22545332	3.3K ohm
R209	22545822	8.2K ohm
R210	22545822	8.2K ohm
R211	22545681	680 ohm (PRC)
R301, 302	22545183	18K ohm (PRC)
R303, 304	22651564	Variable, 50K-A, Tone
R305, 306	22545472	4.7K ohm
R307, 308	22651563	Variable, 50K-B, Volume
R309, 310	22545101	100 ohm
R311, 312	22545101	100 ohm
R313	22545339	3.3 ohm
R401, 402	22545682	6.8K ohm
R403, 404	22545472	4.7K ohm (PRC)
R405	22545681	680 ohm (PRC)
R406	22555225	2.2M ohm
R407, 408	22545121	120 ohm (PRC)
R409, 410	22545104	100K ohm
R411, 412	22545103	10K ohm (PRC)
R413, 414	22545101	100 ohm (PRC)
R415, 416	22545273	27K ohm
R417, 418	22545822	8.2K ohm
R419, 420	22545474	470K ohm (PRC)
R421, 422	22545183	18K ohm (PRC)
R423	22545821	820 ohm (PRC)
R425, 426	22545222	2.2K ohm
R428	22545222	2.2K ohm (PRC)
R501	22545182	1.8K ohm
R502	22545183	18K ohm
R503, 504	22545330	33 ohm
R901	22545221	220 ohm
⚠ R902	22545569	5.6 ohm

ACCESSORIES

AC01	22903193	Owner's Manual
AC02	22906282	Pop Card
AC03	22105357	Tape, Demonstration, C07
⚠ AC04	22176615	Power Supply Cord